

EXHIBIT 4

(Filed Under Seal)

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

SONOS, INC.,
Plaintiff,

vs.

Case No. 3:21-CV-07559-WHA

GOOGLE LLC
Defendant.

-AND-

GOOGLE LLC,
Plaintiff,

vs.

Case No. 3:20-CV-06754-WHA

SONOS, INC.,
Defendant.

ATTORNEYS' EYES ONLY - HIGHLY CONFIDENTIAL

ATTORNEYS EYES ONLY - SOURCE CODE

ZOOM DEPOSITION OF GOOGLE'S 30(b)(6) & 30(b)(1)

KENNETH J. MACKAY

(Reported Remotely via Video & Web Videoconference)

Sunnyvale, California (Deponent's location)

Tuesday, May 10, 2022

STENOGRAPHICALLY REPORTED BY:

REBECCA L. ROMANO, RPR, CSR, CCR

California CSR No. 12546

Nevada CCR No. 827

Oregon CSR No. 20-0466

Washington CCR No. 3491

JOB NO. 5229656

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GOOGLE LLC

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GOOGLE LLC,

Plaintiff,

vs.

Case No. 3:20-CV-06754-WHA

SONOS, INC.,

Defendant.

DEPOSITION OF KENNETH J. MACKAY, taken on
behalf of the Sonos, Inc., with the deponent
located in Sunnyvale, California, commencing at
9:05 a.m., Tuesday, May 10, 2022, remotely reported
via Video & Web Videoconference before
REBECCA L. ROMANO, a Certified Shorthand
Reporter, Certified Court Reporter, Registered
Professional Reporter.

APPEARANCES OF COUNSEL

(All parties appearing via Web Videoconference)

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APPEARANCES (cont'd)

(All parties appearing via Web Videoconference)

ALSO PRESENT:

David West, Videographer

Patrick Weston, Senior Litigation Counsel at

Google

/////

Sunnyvale, California; Tuesday May 10, 2022

9:05 a.m.

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THE VIDEOGRAPHER: Good morning. We are 09:05:48
on the record. The time is 9:05 a.m. Pacific Time,
and the date today is May 10th, 2022.

Please note that this deposition is being
conducted virtually. Quality of recording depends
on the quality of camera and Internet connection of 09:06:08
participants. What is seen from the witness and
heard on screen is what will be recorded.

Audio and video recording will continue
to take place unless parties agree to go off the
record. 09:06:22

This is Media Unit 1 of the
video-recorded deposition of Ken MacKay as
30(b)(6), and in his individual capacity, taken by
counsel for Sonos Inc. in the matter of Sonos
Inc. v. Google and Google LLC versus Sonos Inc., 09:06:37
filed in the United States District Court for the
Northern District of California.
Case Nos. 3:21-CV-07559-WHA and 3:21-CV-06754-WHA
[sic].

The deposition -- the deposition is being 09:07:03

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1 conducted remotely using virtual technology. My 09:07:05
2 name is David West. I am the videographer. The
3 court reporter is Rebecca Romano. We represent
4 Veritext Legal Solutions.

5 I'm not related to any party in this 09:07:14
6 action, nor I am financially interested in the
7 outcome.

8 If there are any objections to
9 proceeding, please state them at the time of your
10 appearance. 09:07:23

11 Counsel and all present, including
12 remotely, will now state their appearances and
13 affiliations, for the record, beginning with the
14 noticing attorney.

15 MR. SHEA: Yes. Rory Shea here on behalf 09:07:33
16 of Lee Sullivan -- from Lee Sullivan Shea & Smith
17 on behalf of Sonos.

18 And with me as well is my colleague
19 David Grosby, also from Lee Sullivan Shea & Smith.

20 MR. KAPLAN: This is Marc Kaplan from 09:07:49
21 Quinn Emanuel Urquhart & Sullivan on behalf of
22 Google and the witness.

23 And with me today is Patrick Weston from
24 Google.

25 THE VIDEOGRAPHER: Thank you. 09:08:03

1 The court reporter may swear the witness 09:08:03

2 in and we will continue.

3 THE COURT REPORTER: Mr. MacKay, If you

4 could raise your right hand for me, please.

5 THE DEPONENT: (Complies.) 09:08:07

6 THE COURT REPORTER: You do solemnly

7 state, under penalty of perjury, that the testimony

8 you are about to give in this deposition shall be

9 the truth, the whole truth and nothing but the

10 truth? 09:08:07

11 THE DEPONENT: I do.

12

13

14

15 09:08:07

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25 09:08:07

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1 THE DEPONENT: Yes. 10:29:40

2 Q. (By Mr. Shea) Do each of the players
3 that are listed in paragraph 3 of Exhibit 2 contain
4 a network interface?

5 MR. KAPLAN: Object to scope. 10:30:03

6 THE DEPONENT: I guess I'm not sure of
7 the technical definition of a "network interface."

8 Q. (By Mr. Shea) Okay. You know, here's
9 what I'm going to do, Mr. MacKay. I'm going to put
10 a pin in this. I -- I think there's maybe a more 10:30:26
11 efficient way to do this. So -- so let's -- I'm
12 going to circle back to that with you. But -- but
13 -- but for now, I'm going to move on to -- to
14 something a little different.

15 So let's see here. I want to ask you 10:30:36
16 about -- start by asking you about the term
17 "speaker group," which I think maybe the easiest
18 thing to do to start us off is -- is to have you
19 turn to the next page of the -- the deposition
20 notice that's in front of you. 10:31:02

21 A. Okay.

22 Q. And -- and if you look here in
23 paragraph 8, subpart (i), it talks about -- it
24 references this term "speaker group," and then
25 refers to this Google help page where they talk 10:31:23

1 about speaker groups. 10:31:26

2 Do you see that?

3 A. Yes.

4 Q. What is a "speaker group" as Google uses

5 that term? 10:31:33

6 A. I would describe it as a set of devices

7 that appears as a castable -- as a Cast target.

8 And when casted to, they all play together --

9 Q. Okay. And when you say all --

10 A. -- specifically -- specifically audio. 10:32:03

11 Sorry to interrupt.

12 Q. Okay. Let me -- I'm going to try to

13 unpack that a little bit. So -- so let me take it

14 in a couple of parts. You said, "it's a set of

15 devices that appears as a Cast target." 10:32:19

16 What do you mean by "appears as a Cast

17 target"?

18 A. So what I mean is that you can cast to

19 the group. So in -- if you're in a sender app, for

20 example, and you hit the Cast button, then the 10:32:36

21 group would show up as -- as a potential Cast

22 option.

23 Q. Okay. And what does it mean to be a

24 "potential Cast option"?

25 A. You mean from the perspective of the user 10:33:06

1 or from a technical perspective? 10:33:08

2 Q. Let's take it one by one.

3 So let's start with -- with from the
4 perspective of a user, what does it mean to be a
5 "potential Cast target"? 10:33:17

6 A. So it would mean that they -- when they
7 hit the Cast button in an app, or I guess also
8 through voice, they can select something as the
9 thing that they're going to cast to, and then
10 the -- the content that they cast is -- is played 10:33:43
11 on that -- that thing. So in the context of a
12 group, it would be that set of devices.

13 Q. And then same question, but from the
14 perspective -- excuse me -- from a technical
15 perspective, what does it mean to be a "potential 10:33:58
16 Cast target"?

17 A. From a technical perspective, it means
18 that the -- the -- the target is announcing itself
19 over mDNS as a Cast device, I guess. Like a
20 "virtual device" is what we call it. And it 10:34:18
21 accepts incoming Cast connections.

22 Q. And you had said that when -- so taking
23 the second part of what you said -- you described
24 it as when cast to, they all play together.

25 Do I have that right? 10:34:47

1 A. Yes. 10:34:48

2 Q. Okay. What do you mean by "they all play
3 together"?

4 A. So the same -- specifically for audio,
5 all of the devices in the group play the same 10:34:58
6 audio.

7 Q. And is the goal of -- of the -- the
8 technology for those players to play the same audio
9 in synchrony?

10 A. So the goal, as we've implemented it, is 10:35:18
11 that the same audio comes out of the actual
12 speaker -- or I guess -- yeah. The same audio
13 comes out of the speaker at the same time. So like
14 if -- if there's multiple devices with speakers,
15 then the same audio, I guess, sample would come out 10:35:38
16 of each speaker at the same time.

17 Q. Okay. And -- and that's another way you
18 and Google described that, is that "they play out
19 in synchrony"; is that right?

20 MR. KAPLAN: Object to form. 10:35:55

21 THE DEPONENT: Yeah, I think we do use
22 the term "in sync" or "synchronous playback," I
23 think, is the term that we use as well.

24 Q. (By Mr. Shea) So -- so Google does -- in
25 referring to the playback of a speaker group, 10:36:11

1 want to use speaker group in the way it's used 10:46:45
2 in -- in Exhibit 36 to refer to a static group.
3 And I'll -- I may use those terms
4 interchangeably. But if you hear "speaker group, "
5 that's what I'm referring to. 10:46:55
6 A. Okay.
7 Q. So with that, maybe I'll just ask my
8 question again.
9 Can you explain for me, at a high level,
10 how a user defines a speaker group of 10:47:05
11 Google players?
12 A. Yeah. The user in the Google Home app
13 can either select a device, and then in the
14 settings for the device, they can like -- they can
15 choose a group for the device to be added to, a 10:47:35
16 preexisting group or create a new group.
17 And then I think there's another option
18 to create a group and select which devices should
19 be added to it.
20 Q. Okay. And then once a user has -- has 10:47:50
21 defined a group, can you just tell me, at a high
22 level, how the user plays music on that group?
23 A. So there are a few options. The user can
24 use a voice command to play music on the group,
25 targeting it by name, or they can cast to the group 10:48:28

1 from a sender app, or I believe in the Google Home 10:48:33
2 app, you can tap on the group and it will start
3 playing music possibly.

4 There might be other options, too.

5 Q. Okay. In each of those options that you 10:48:51
6 just gave us, does the functionality of playing
7 music on that speaker group -- actually, here. Let
8 me take a step back.

9 Have you heard the phrase "launching" a
10 speaker group? 10:49:10

11 A. Yes.

12 Q. What does it mean to launch a speaker
13 group?

14 A. I would say it means that we receive a
15 launch message over a Cast connection that's 10:49:28
16 connected to the endpoint associated with the
17 speaker group. And then as a result of that launch
18 message, we launch the appropriate receiver app and
19 the -- the session associated with that app is
20 associated with the speaker group. 10:49:54

21 Q. So when a user plays music -- selects a
22 speaker group to play music on it, does that then
23 cause the speaker group to be launched?

24 A. I would say the act of selecting it
25 doesn't. It's -- it's the result of when the 10:50:24

1 launch message is received, when that's handled. 10:50:28

2 That is what causes the speaker group to be
3 launched.

4 Q. Okay. So -- so when it's selected, that
5 may initiate the -- the launch message to be sent. 10:50:44

6 But then, in your view, it doesn't
7 actually accomplish the launch until that message
8 is received. Do I have that right?

9 A. Received and handled, yeah.

10 Q. And in at least -- in the context of -- 10:51:07
11 of playing music on a speaker group using an app as
12 opposed to voice, is it -- is the general process
13 that you would select which group you want to play
14 music on and then the app will cause the device to
15 send a launch message? 10:51:30

16 A. When you say the "device," which device
17 do you mean?

18 Q. Yeah. All right. Let me try it again.
19 Yeah.

20 In -- in the context of using an app 10:51:43
21 running on what I'm going to call a "controller
22 device," when a user selects a particular group --
23 speaker group to play music on, will the app
24 running on the controller device then cause the
25 controller device to transmit a launch message? 10:51:58

1 A. So I think there's some technical details 10:52:07
2 there in terms of whether the app itself causes the
3 launch message to be sent. Because my
4 understanding is that, at least on Android, the --
5 the picker for Cast targets is shown by a different 10:52:22
6 component called the Cast SDK, which causes --
7 which would cause the launch message to be sent.
8 I'm not sure if you're interested in that
9 distinction.

10 Q. No, I -- I appreciate it. Yeah. 10:52:37

11 And so maybe -- maybe I can just try to
12 ask my question without running into that issue,
13 because I'm really more interested at a -- at a
14 device level.

15 I guess my question is that, as a result 10:52:51
16 of a user selecting a particular speaker group for
17 launch on a controller device, will that then
18 trigger the controller device to send a launch
19 message for that selected speaker group?

20 MR. KAPLAN: Object to form. Scope. 10:53:12

21 THE DEPONENT: So when the user selects a
22 speaker group to cast to, I believe that would
23 typically cause a launch message to be sent from
24 the controller device to a member of the speaker
25 group. 10:53:35

1 Q. (By Mr. Shea) So that probably leads 10:53:40
2 into my next question, which is that once a speaker
3 group is created, are the players in that -- are
4 there different roles that are assigned to those
5 different players in the speaker group? 10:53:56

6 A. I wouldn't say that the roles are
7 assigned. So as you might remember from the
8 previous testimony, we have an election process
9 whereby the devices that are currently online, that
10 are members of a speaker group, elect amongst 10:54:16
11 themselves a leader device and that leader device
12 acts as the endpoint for Cast requests to the
13 group.

14 Q. Okay. Yeah. You're right. And I was
15 trying to get at this issue and -- and -- so I 10:54:32
16 understand the distinction.

17 At a high level, can you describe for us
18 what a leader device is in a speaker group?

19 MR. KAPLAN: Object to form.

20 THE DEPONENT: So in a speaker group, the 10:54:47
21 devices elect a leader amongst -- the device are
22 continually electing, choosing whichever device
23 that they think is the current -- the best leader.
24 And that device is the device that opens a
25 receiving TCP socket for incoming Cast connections 10:55:10

1 associated with the group, and it advertises the 10:55:15
2 group over mDNS as a Cast target.

3 Q. (By Mr. Shea) Among other things.

4 In addition -- right. Sorry. You -- you
5 were going the same way that maybe I was, which is 10:55:27
6 that in addition to that functionality you just
7 described for us, does the leader also perform a
8 different set of functionality when the group is
9 launched?

10 A. Yes. 10:55:48

11 Q. And at a high level, can you -- can you
12 describe for me what the leader-specific
13 functionality is that's carried out by a leader
14 once a group is launched?

15 A. So the sender has set up a connection to 10:56:02
16 the -- the leader's endpoint representing the
17 group. And that device is -- received a launch
18 message, and so that device would launch the
19 appropriate receiver app, which could be either a
20 JavaScript app or C++ code. 10:56:24

21 And then if that app plays audio, the
22 leader would distribute that audio to any connected
23 followers.

24 Q. In addition to distributing that audio to
25 connected followers, does a leader also distribute 10:56:52

1 at the same time. But that doesn't imply that it's 12:14:02
2 heard synchronously or that it actually plays
3 synchronously.

4 Q. (By Mr. Shea) So then if I could also
5 have you take a look at PDF page 25, which is Bates 12:14:14
6 page ending -56.

7 A. Yes.

8 Q. First of all, do you -- when it says
9 "C4A" here, do you know what that means?

10 A. I believe it means Cast for audio. 12:14:31

11 Q. And this says each here that "Each C4A
12 device can be a member of several groups."

13 Do you see that?

14 A. Yes.

15 Q. Is -- is that an accurate statement with 12:14:43
16 respect to the static groups that exist in Google's
17 products today?

18 A. I'm not sure that it applies for all Cast
19 for audio groups -- or sorry -- all Cast for audio
20 devices, because my understanding is that Cast for 12:15:05
21 audio devices are third-party devices. And I'm --
22 I'm not sure exactly what features they support.

23 Q. I see.

24 Limiting the question to Google's own
25 player -- Cast-enabled players that we've been 12:15:23

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1 talking about today, is it true that each of those 12:15:26

2 players can be a member of several static groups?

3 A. If the device supports groups at all

4 then, yes, it can be a member of multiple static

5 groups. 12:15:44

6 Q. Is there any maximum limit on how many

7 static groups a given Google player can be a part

8 of?

9 A. We don't have an explicit limit.

10 Q. Do you have an understanding -- this 12:15:57

11 diagram that's on this slide we're looking at, do

12 you have an understanding of what that's showing

13 us?

14 A. It appears to show four devices, and then

15 they're grouped in various ways. 12:16:22

16 Q. So, yeah, for instance, there's this "1st

17 floor" oval or -- or box around speaker A and

18 speaker C.

19 Do you see that?

20 A. Yes. 12:16:37

21 Q. What does that represent?

22 A. I don't know. I mean, it looks like it

23 represents a group, but I didn't write the

24 document.

25 MR. SHEA: So maybe -- I'm going to ask 12:16:56

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1 should be discoverable anyways. 02:36:55

2 Q. And then the middle screen shows this
3 little icon on the bottom under the groups -- in
4 the groups tile that says "Morning."

5 Do you see that? 02:37:13

6 A. Yes.

7 Q. Do you have an understanding of what that
8 represents in the context of the Google Home app?

9 MR. KAPLAN: Object to scope.

10 THE DEPONENT: So I think, if -- if I 02:37:24
11 remember correctly, what -- what the Google Home
12 app does is it discovers all the devices on the
13 local network and asks them for what their group
14 membership is.

15 And then based on the sum total of all of 02:37:36
16 those group memberships, it forms -- it -- it forms
17 and -- and it -- it figures out what all of the
18 groups are on the network. And then it would use
19 that information to fill in that part of the -- the
20 display. 02:37:55

21 Q. (By Mr. Shea) And from that middle
22 screenshot here in the example we're showing, which
23 is this Morning group that we've now created, are
24 you able to tell whether or not that Morning group
25 is currently launched? 02:38:11

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1 Q. (By Mr. Shea) So based on your 03:16:26
2 understanding of the Google Home app, is it
3 possible for a user to select a group for launch
4 from this interface we're looking at on page 1 of
5 Exhibit 45? 03:16:46

6 MR. KAPLAN: Object.

7 THE DEPONENT: I think so. They can tap
8 the "Play music," I guess, words underneath the
9 group.

10 Q. (By Mr. Shea) And -- and when a user 03:17:00
11 taps "Play music" underneath one of those groups,
12 do you have an understanding of what the device
13 running the Google Home app then does in order to
14 cause the group to be launched?

15 MR. KAPLAN: Object to scope. 03:17:17

16 THE DEPONENT: I'm not totally sure. But
17 I think my understanding is that it causes a
18 request to go to the cloud services. And then the
19 cloud service chooses the user's default music
20 provider and executes a cloud Cast command -- 03:17:40
21 command to the group to -- to play some music using
22 that music provider.

23 Q. (By Mr. Shea) Okay. Do you know, in --
24 in addition to that functionality, would the device
25 running the Google Home app also send a launch 03:17:58

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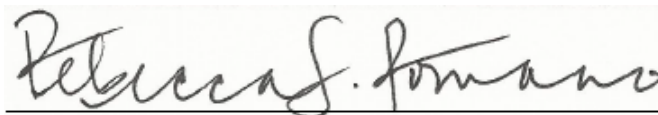
1 I, Rebecca L. Romano, a Registered
2 Professional Reporter, Certified Shorthand
3 Reporter, Certified Court Reporter, do hereby
4 certify:

5 That the foregoing proceedings were taken
6 before me remotely at the time and place herein set
7 forth; that any deponents in the foregoing
8 proceedings, prior to testifying, were administered
9 an oath; that a record of the proceedings was made
10 by me using machine shorthand which was thereafter
11 transcribed under my direction; that the foregoing
12 transcript is true record of the testimony given.

13 Further, that if the foregoing pertains to the
14 original transcript of a deposition in a Federal
15 Case, before completion of the proceedings, review
16 of the transcript [X] was [] was not requested.

17 I further certify I am neither financially
18 interested in the action nor a relative or employee
19 of any attorney or any party to this action.

20 IN WITNESS WHEREOF, I have this date
21 subscribed my name this 13th day of May, 2022.

22
23 

24 Rebecca L. Romano, RPR, CCR
25 CSR. No 12546

ERRATA SHEET

Case Names: *Google LLC v. Sonos, Inc.*
Case No. 3:20-cv-06754-WHA

Sonos, Inc. v. Google LLC
Case No. 3:21-cv-07559-WHA

Deposition Date: May 10, 2022

Deponent: Kenneth MacKay (30(b)(6))

I, Kenneth MacKay, do hereby certify that I read the foregoing transcript of my testimony taken on May 10, 2022, and further certify that it is a true and accurate record of my testimony, with the exception of the corrections listed below:

Page	Line	Now Reads	Should Read	Reason
30(b)(6)				
26	12	Numerate	Numerette	Transcription error
27	13	Numerate	Numerette	Transcription error
32	12	application manager ample	application_manager_impl	Transcription error
34	24	ruled	rolled	Transcription error
45	15	Corelan	Korlan	Transcription error
85	6	Joint	Join	Transcription error
122	13	Joint	Join	Transcription error
236	3	Receiver_name space_handler.cc	receiver_namespace_handler.cc	Transcription error
30(b)(1)				
261	15	Tabus	Tavis	Transcription error
261	15	YoungJin	Byungchul	Transcription error

Dated: 2022-Jun-28

By: /s/ Kenneth MacKay
Kenneth MacKay